

I. phreorphales or granitis I. Nevadrus is thelen

My remarks upon exhaustion are not confined to siliceous soils, but apply to all soils without exception. Does Mr. Burrows mean that siliceous will not be benefited by carbonic acid gas as well as other soils? and if not, why not? The extract from Professor Johnson which says: "Some grass lands will retain the good condition they thus slowly acquire for a very long period without manuring," &c. Hundreds if not thousands of acres of grass lands in the highlands of Scotland have yielded good crops of hay from time immemorial without being manured by man, but that is no proof that they are not well manured. The droppings of the sheep and other stock are washed down the mountain sides into the valleys, and in the lowlands in the vicinity of mountain streams the grass lands are often flooded during winter, and in both cases excellent crops of hay are reaped both in quantity and quality.

The rich corn lands and grass lands of England and Ireland may be in the same position as the Scotch valleys, in mountain districts they will be, and likewise where irrigated by floods; but should any owner of grass lands expect the carbonic acid gas of the atmosphere to enrich his pastures, he will reap disappointment.

Professor Johnson says: "Every crop takes away from the soil a certain quantity of those substances which all plants require. If you are always taking out of the land in the form of crops; and if he is always taking out and putting nothing in, it must at last become empty or exhausted.

grass

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## MISSOURI BOTANICAL GARDEN GEORGE ENGELMANN PAPERS

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and the deeper the ploughing the greater the effects; that and cold damp being drawn farther from the surface. deep ploughing being so much advantage in drawing drainage

Editor

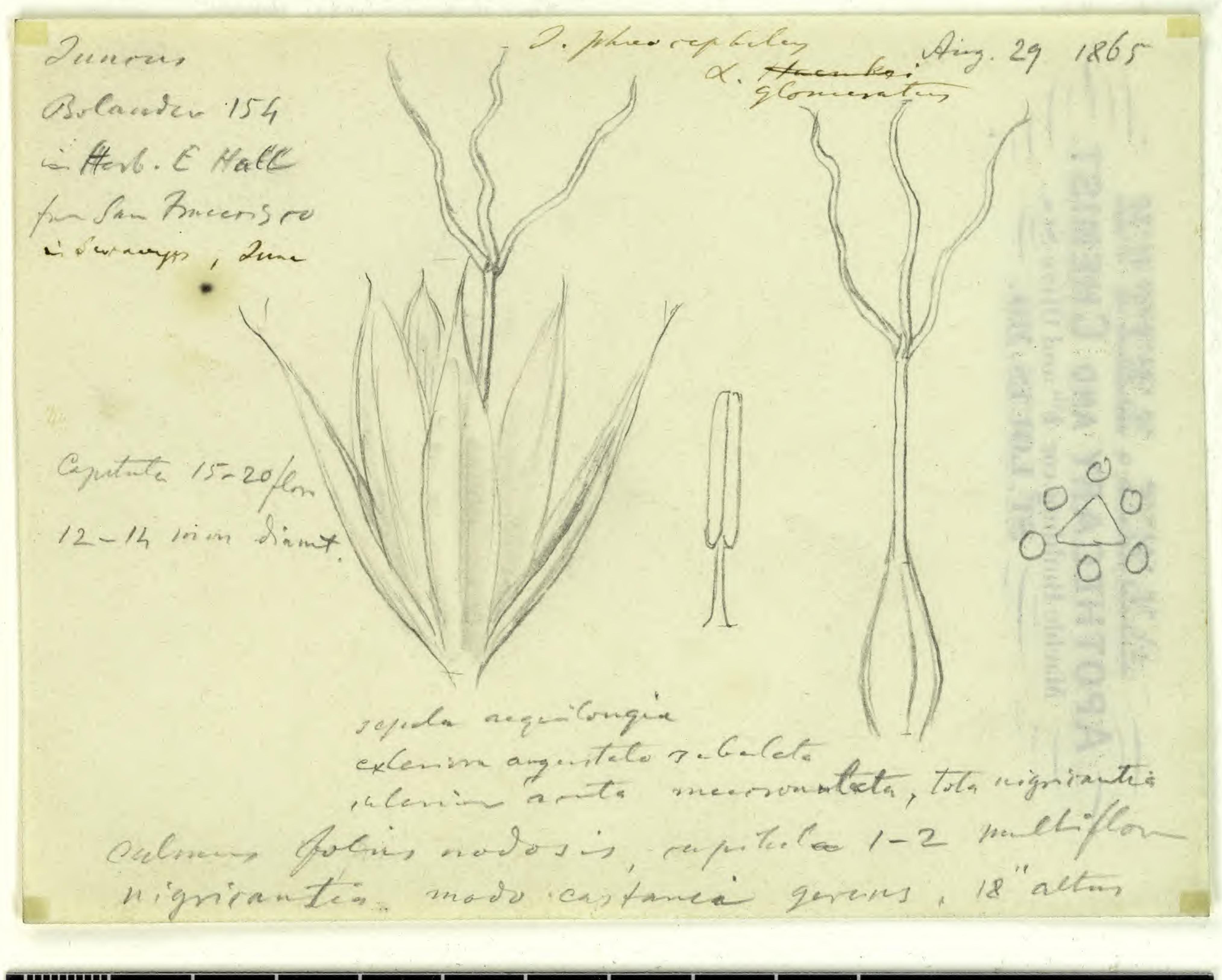
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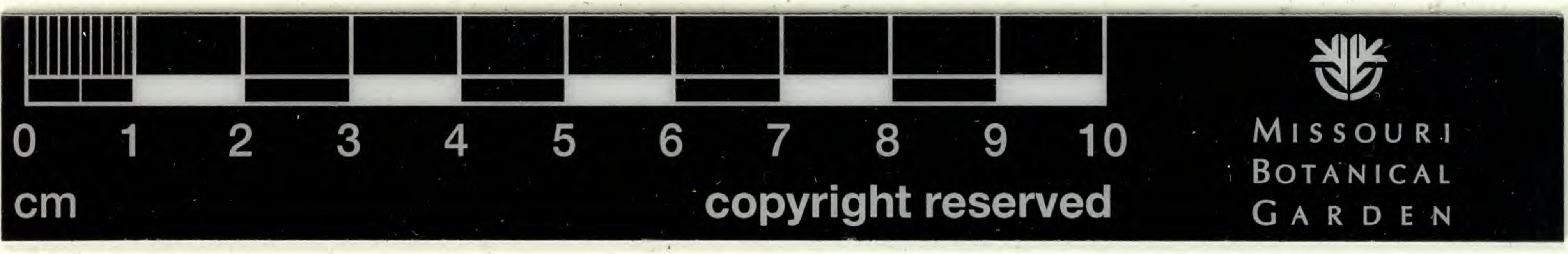
a regular digging or trenching shoul the land is more indebted y-cut drain than to the tile that is laid in the bottom of it, and is ploughed up, which would produce nearly the same effects of the tile, at the same of the uch advantage in drawing the action to ous water, and also exposing the soil inches cut drain; for there is no doubt that the more retentive the soil may be. few that to the drain to within a am inclined to think the new newly

er thing I would remark, that there is generally too little attention consequently the more reten a little attention will show that the e. It should also act as a conducton carry off, being generally thought that i afford a 50 should be, in order to large enough to contain the water they may have the water from the upper soil; in, it something more. the size of the tiles put that is required; but the nay be, the larger that purpose erform are surface more paid

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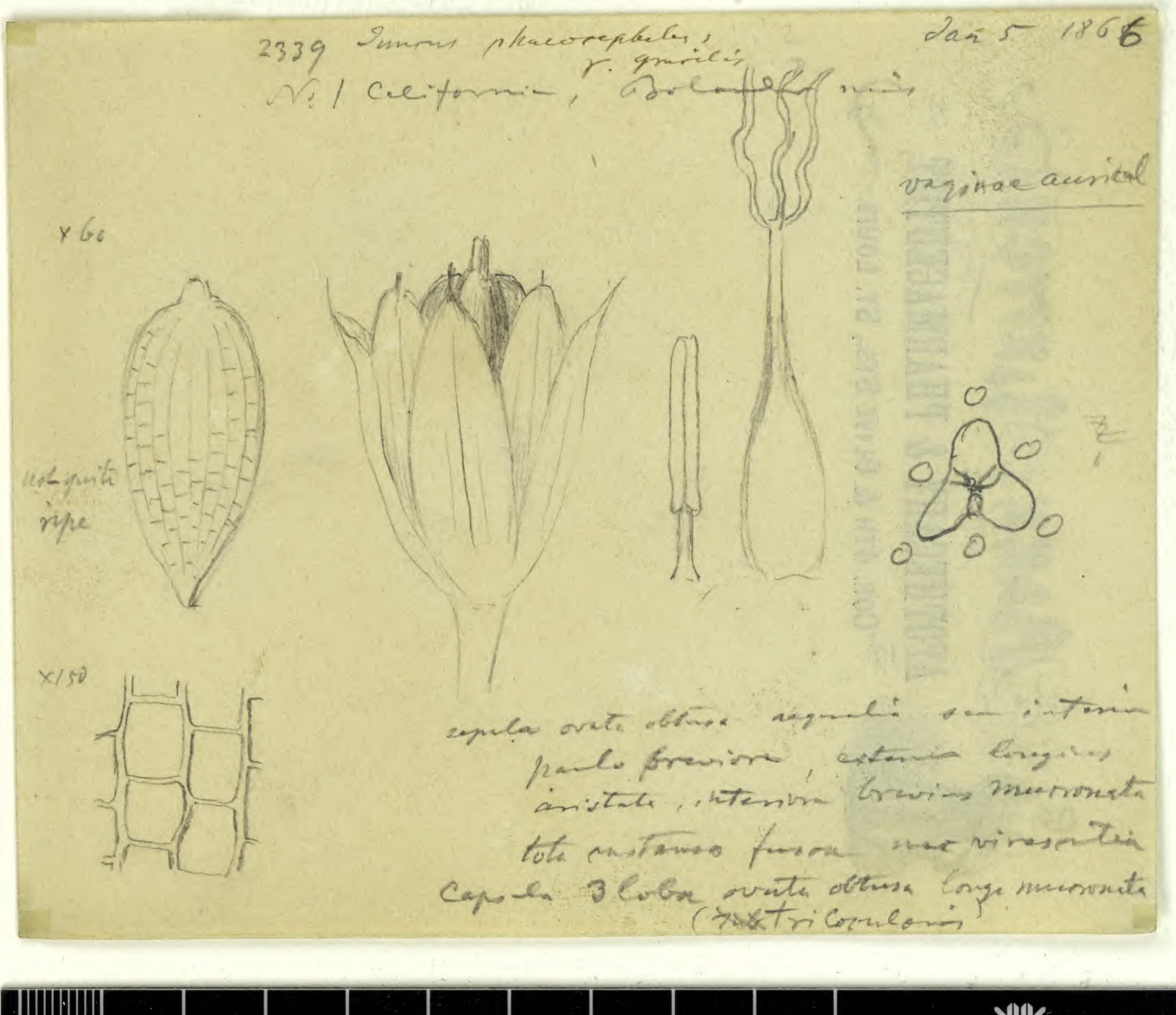






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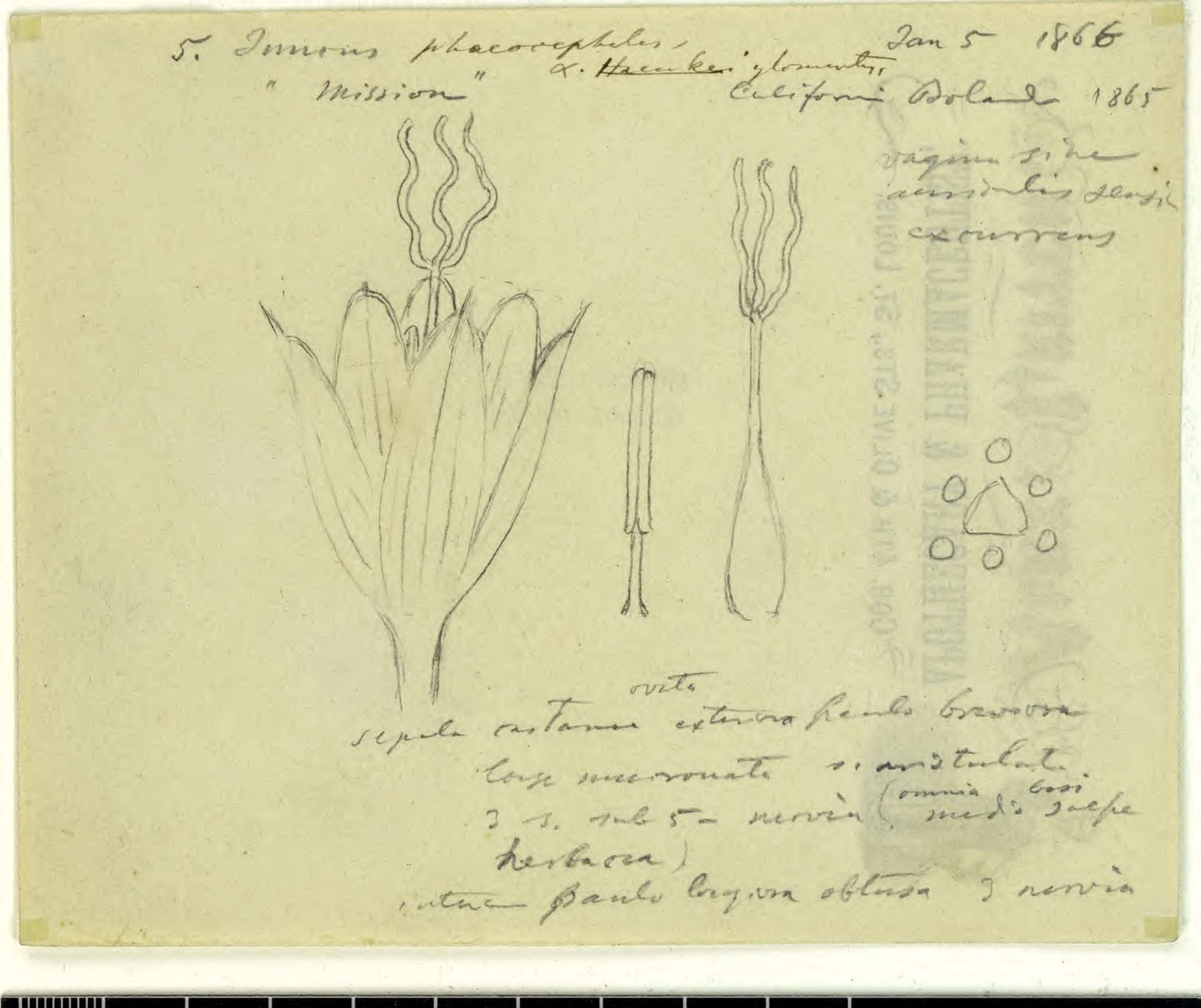






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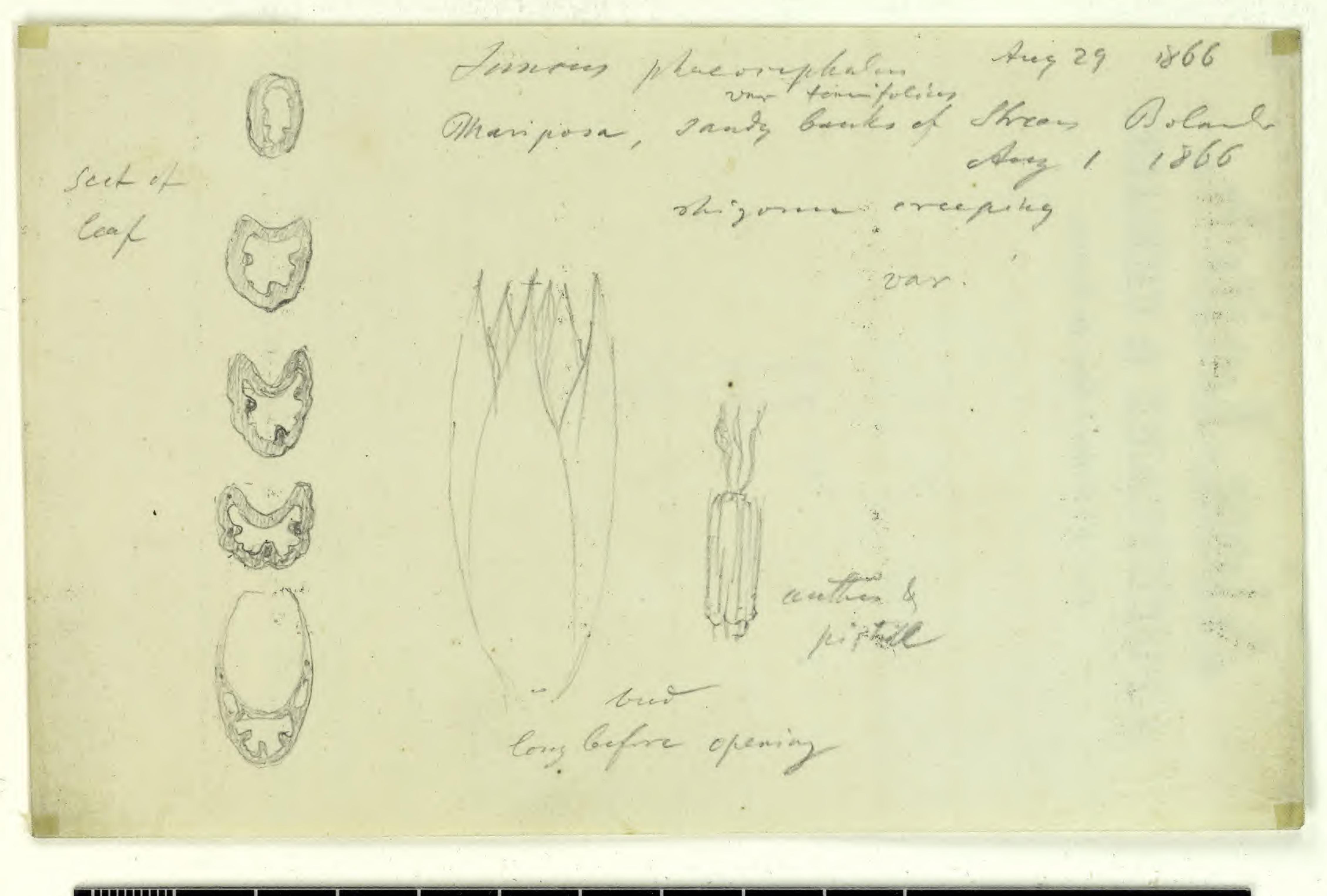




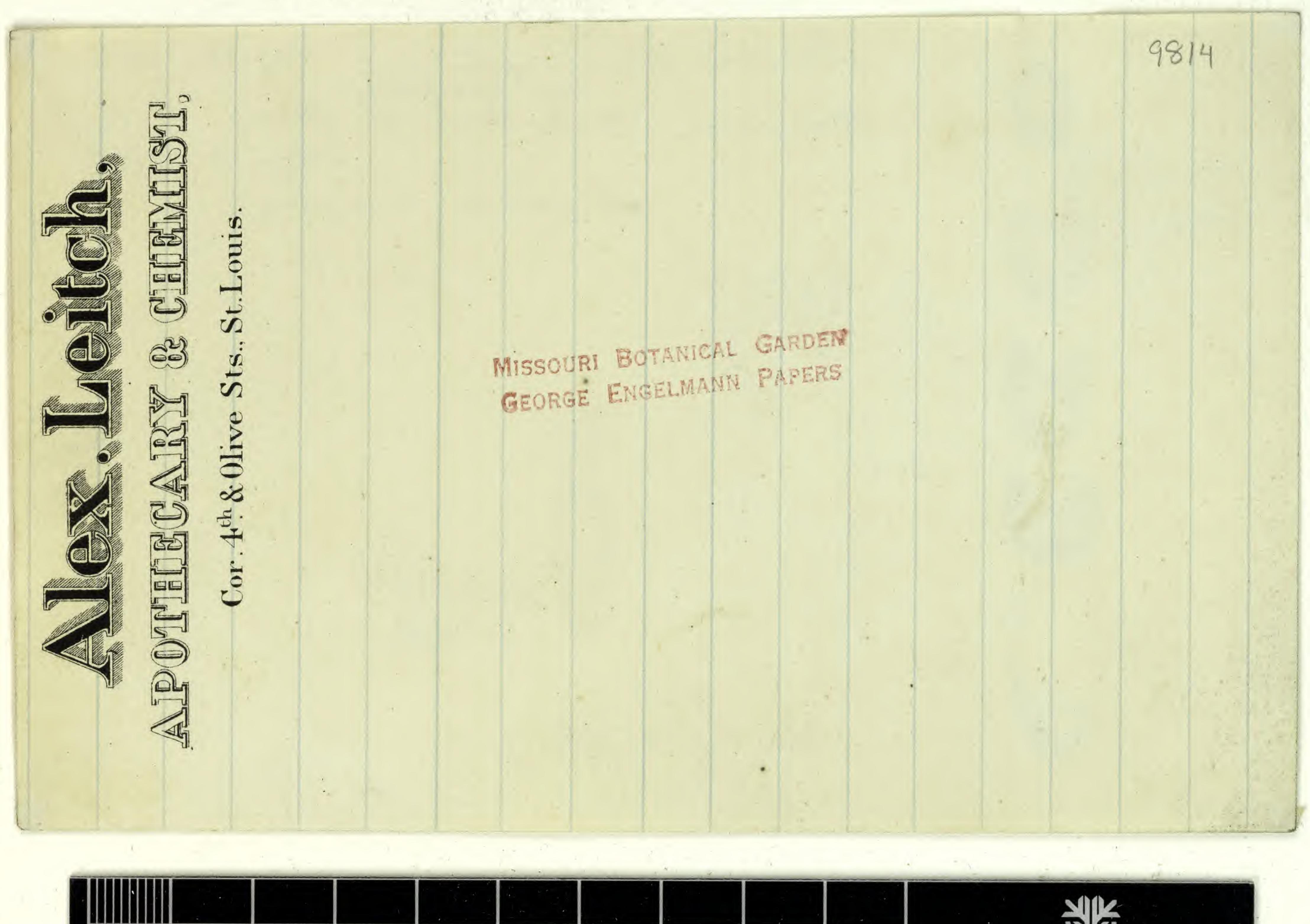


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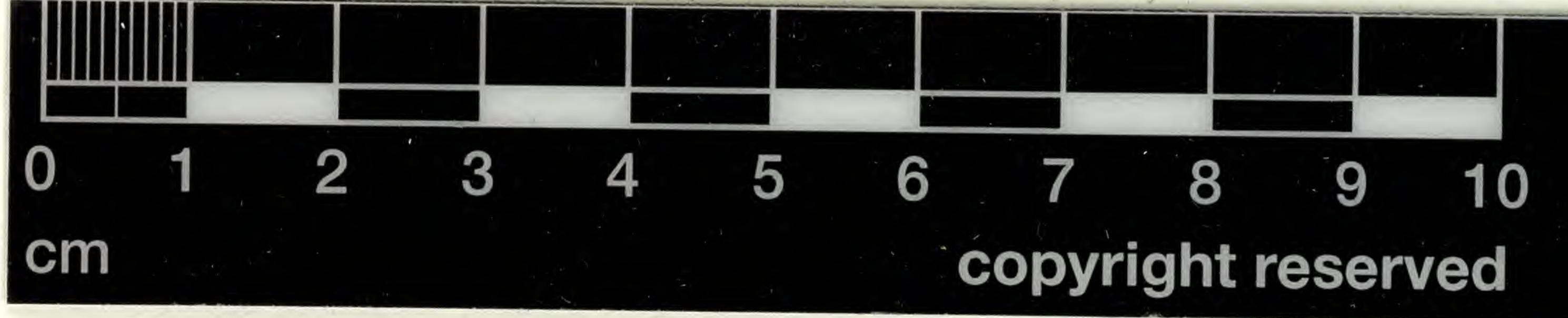






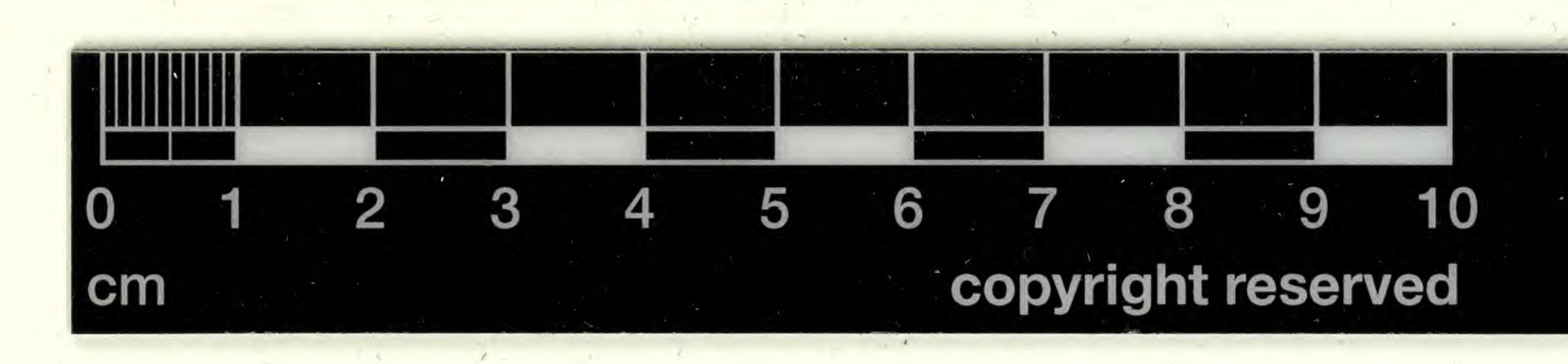




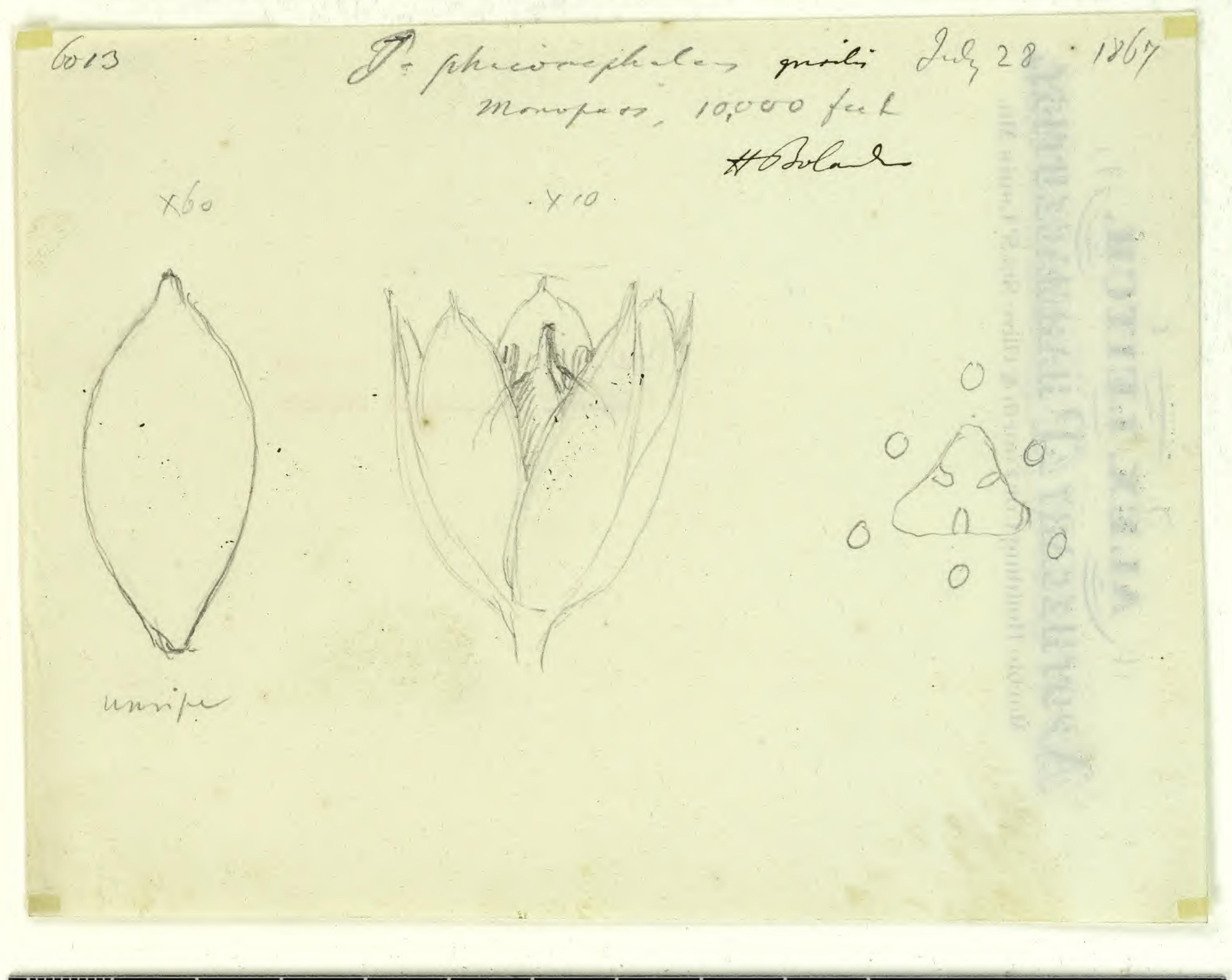




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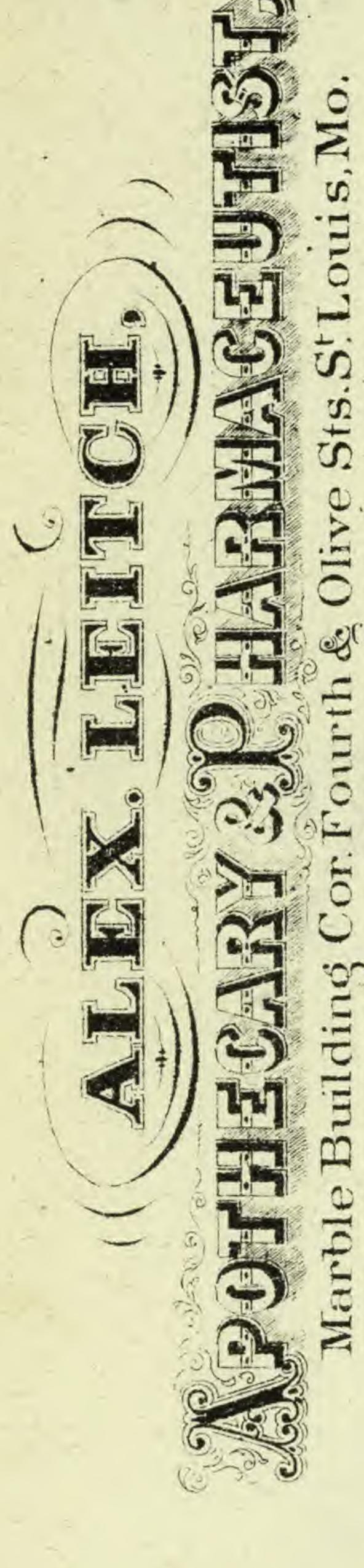


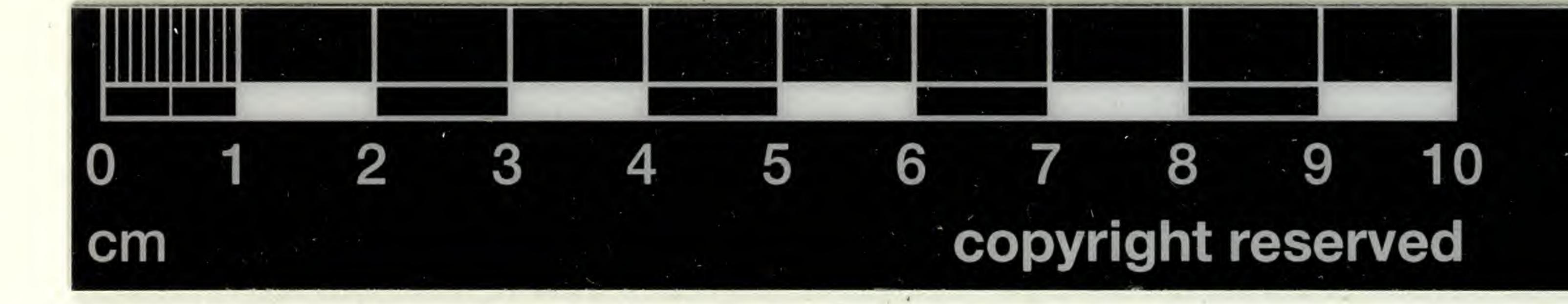




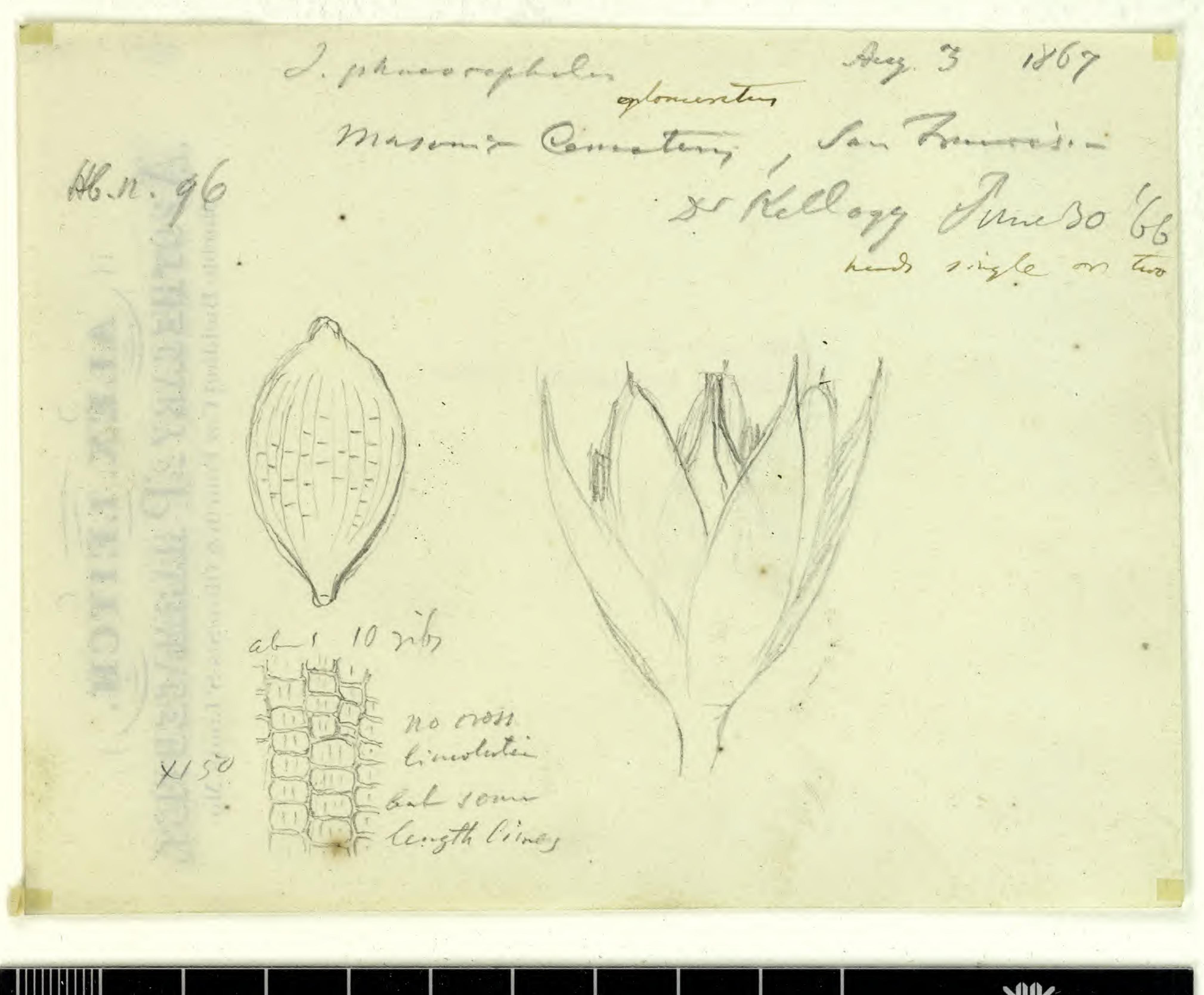


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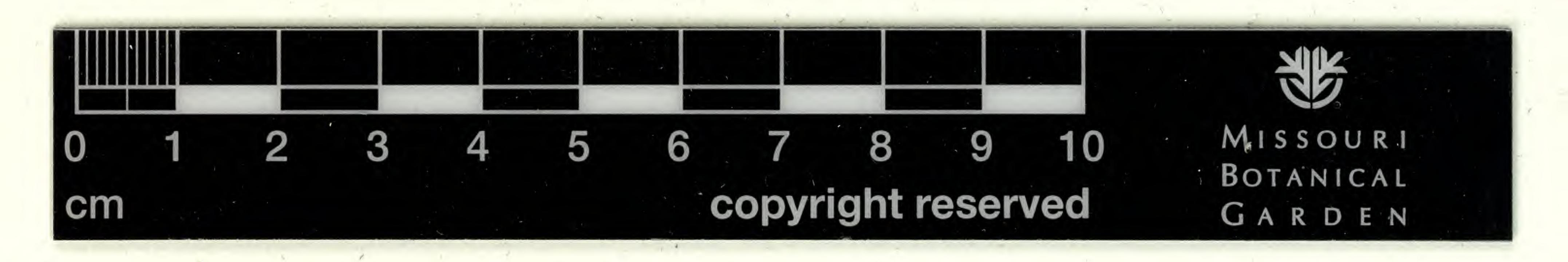


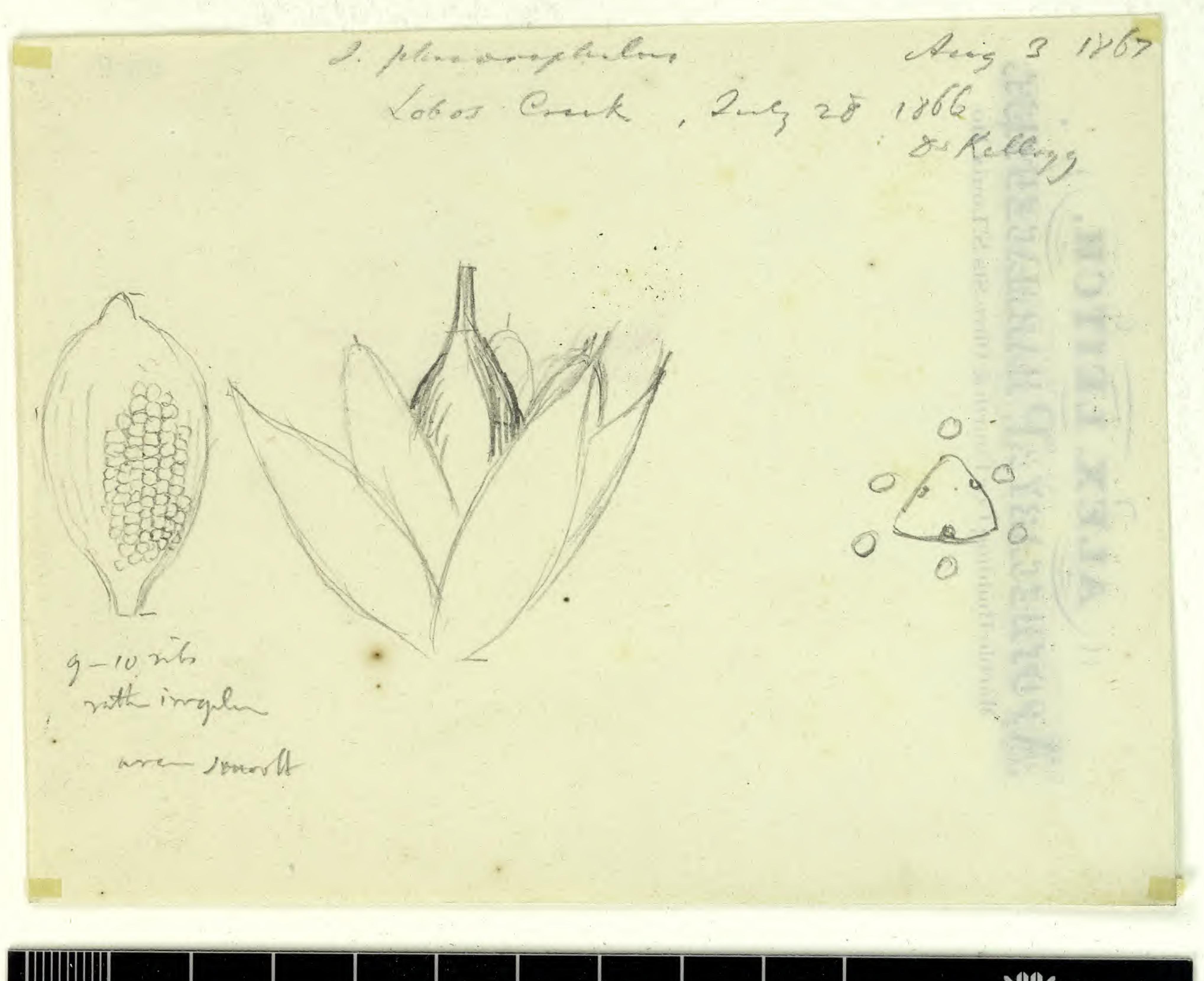


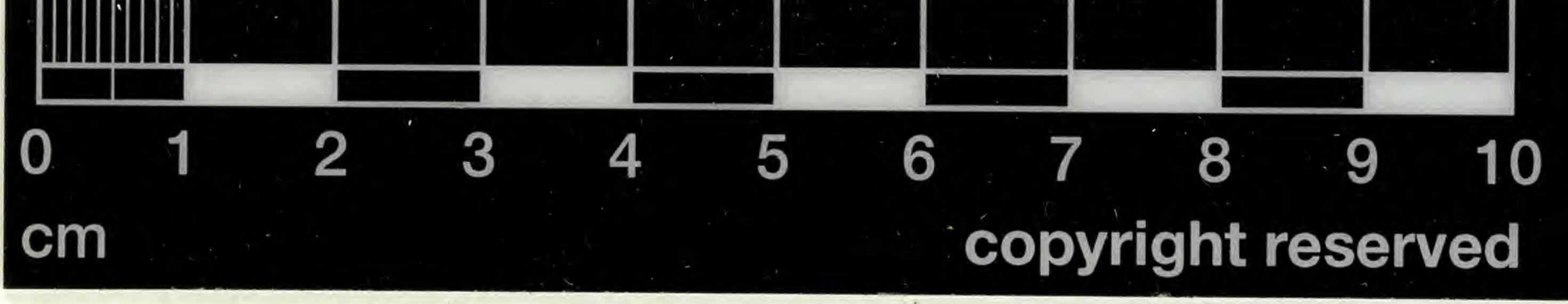




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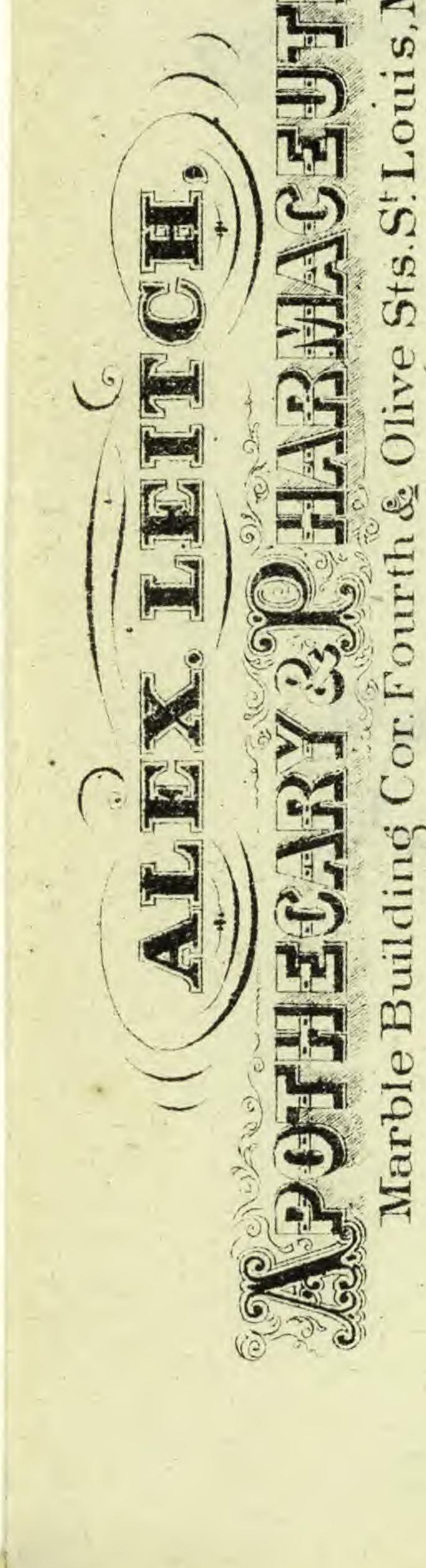




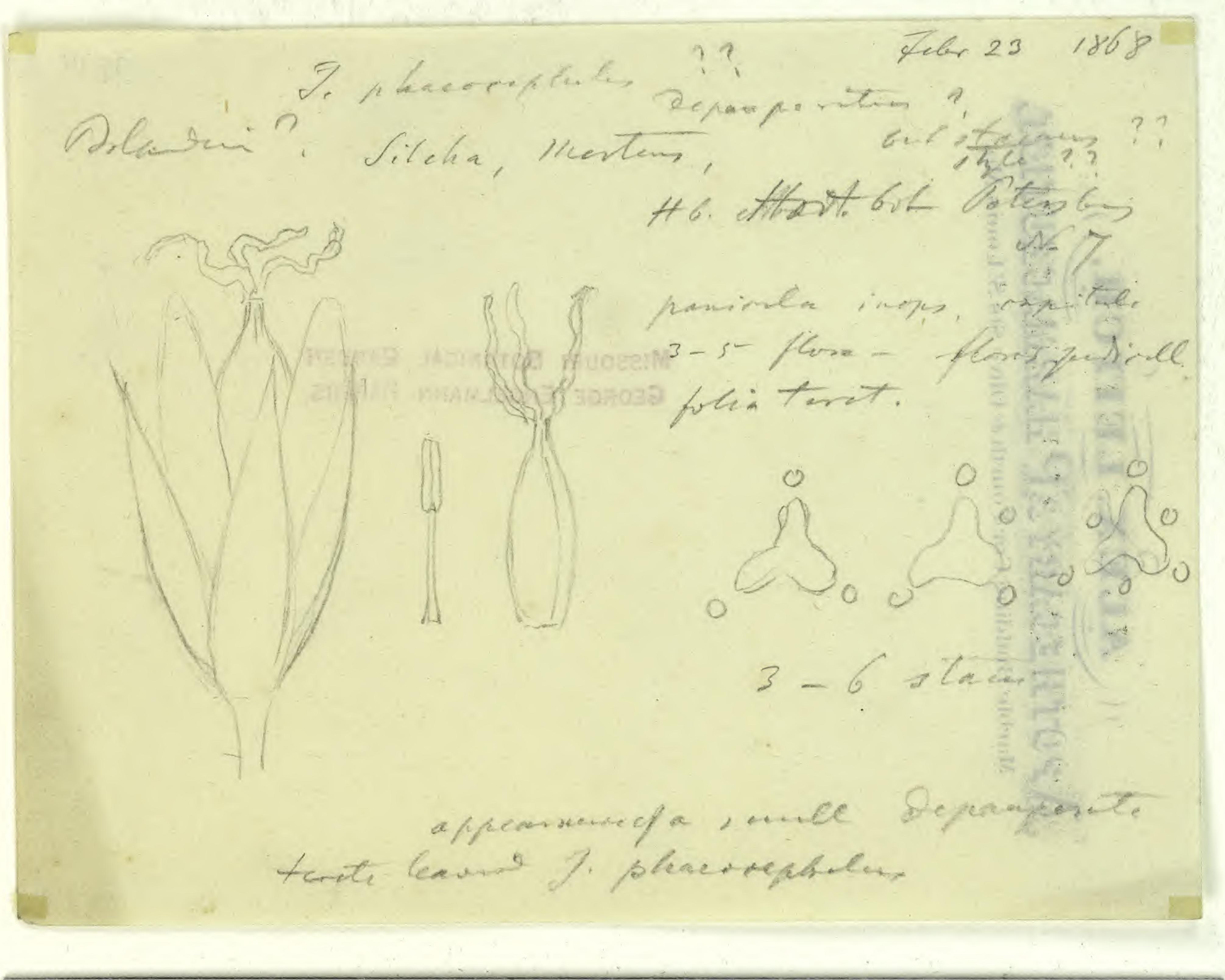




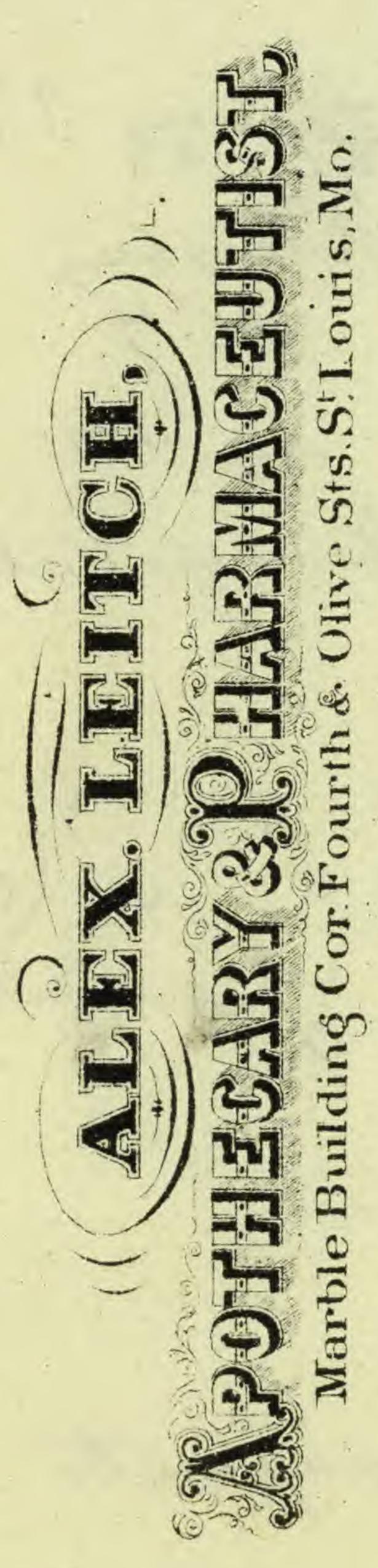
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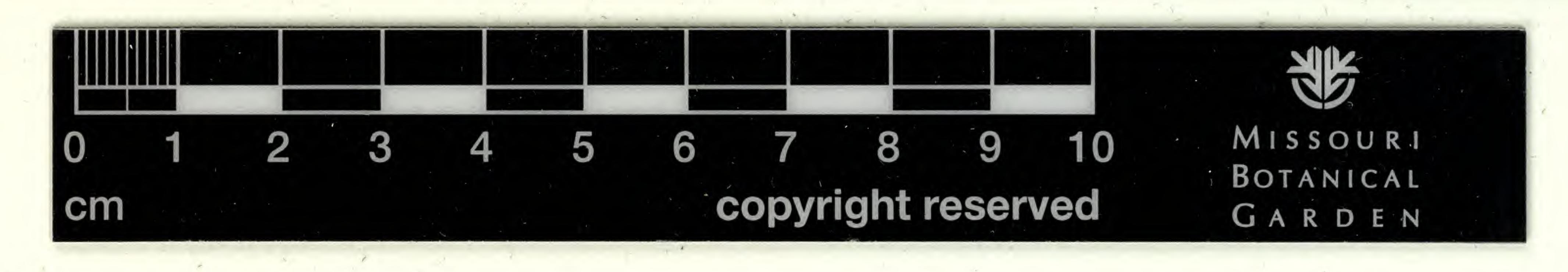




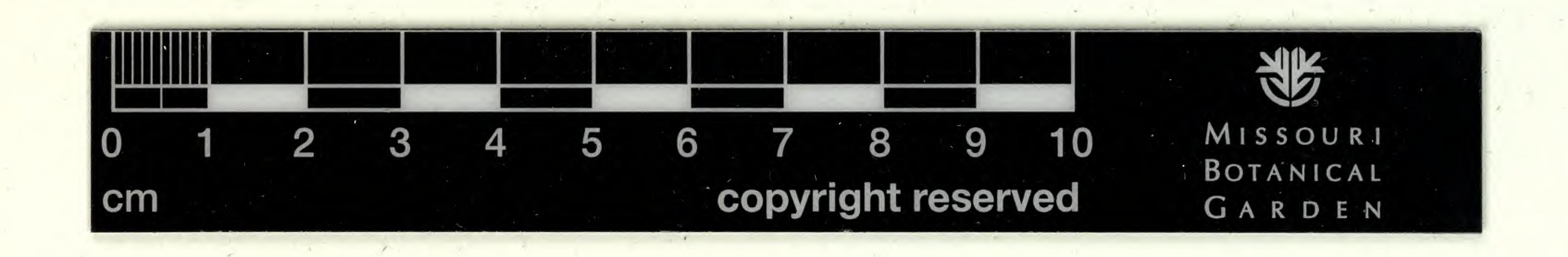
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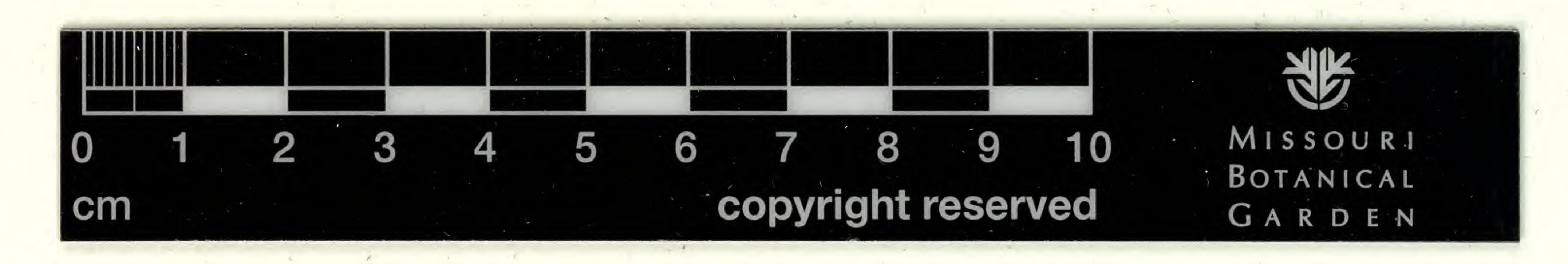




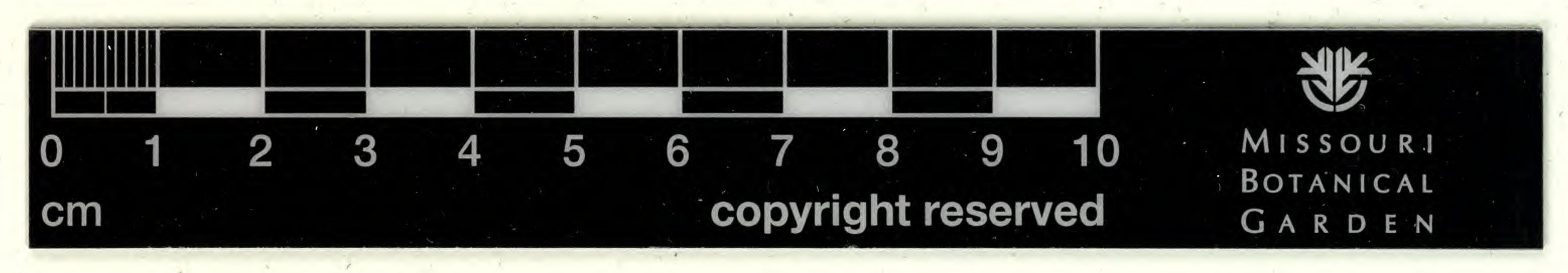


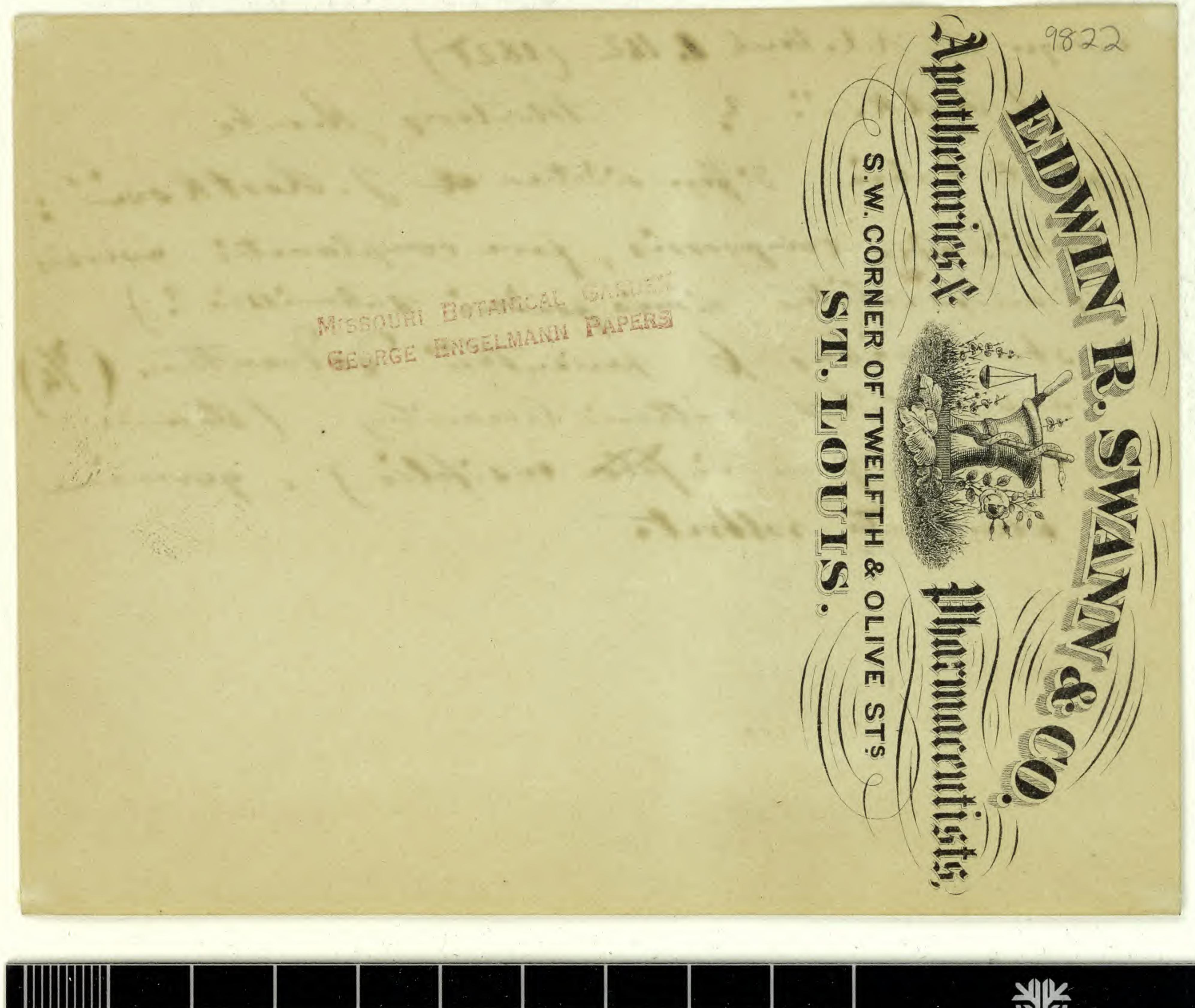
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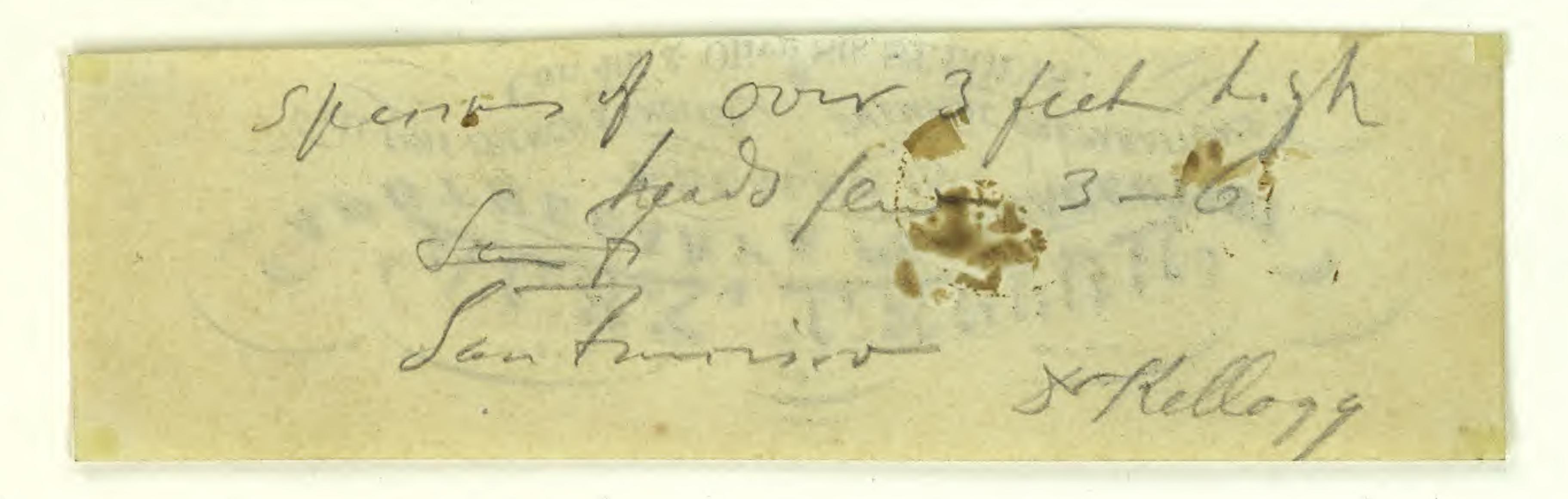


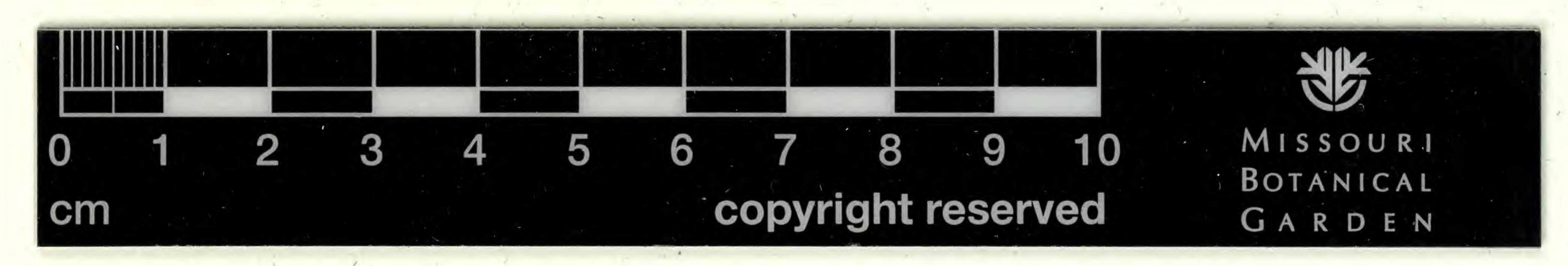
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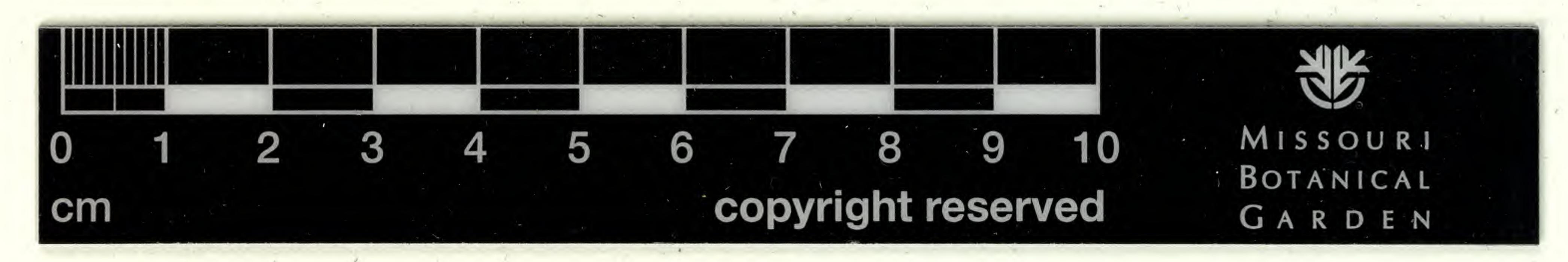


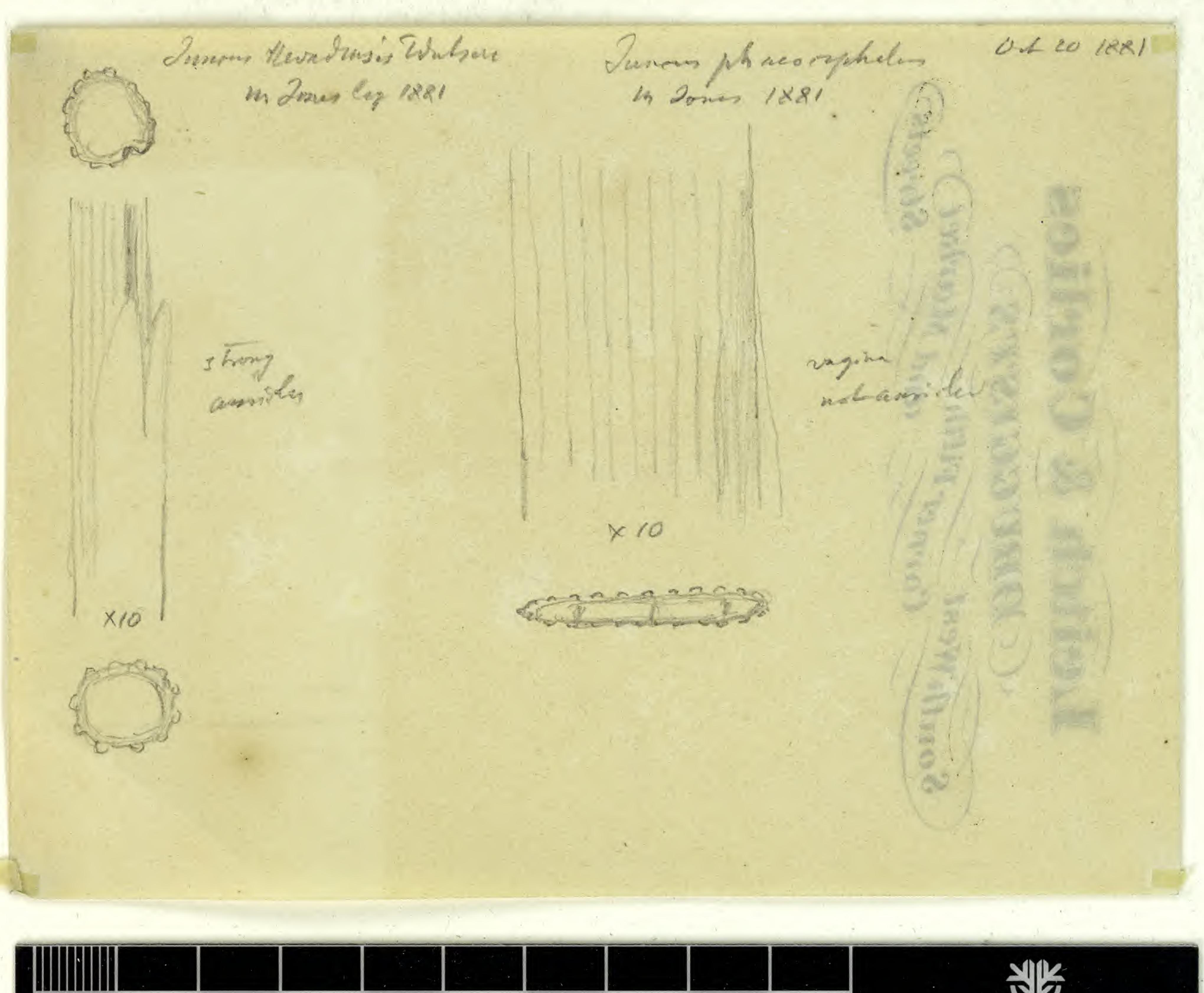




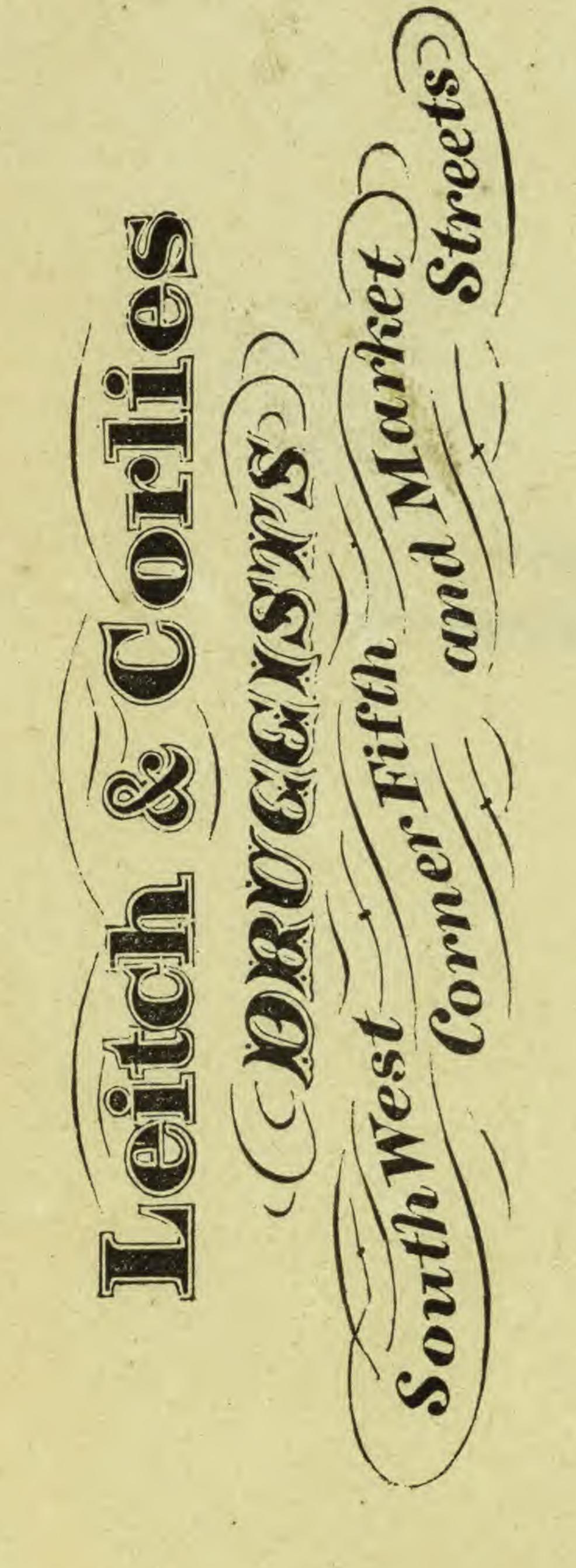












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BOTANICAL GARDEN

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as' range of mountains, on Capt. Simpson's return trail.

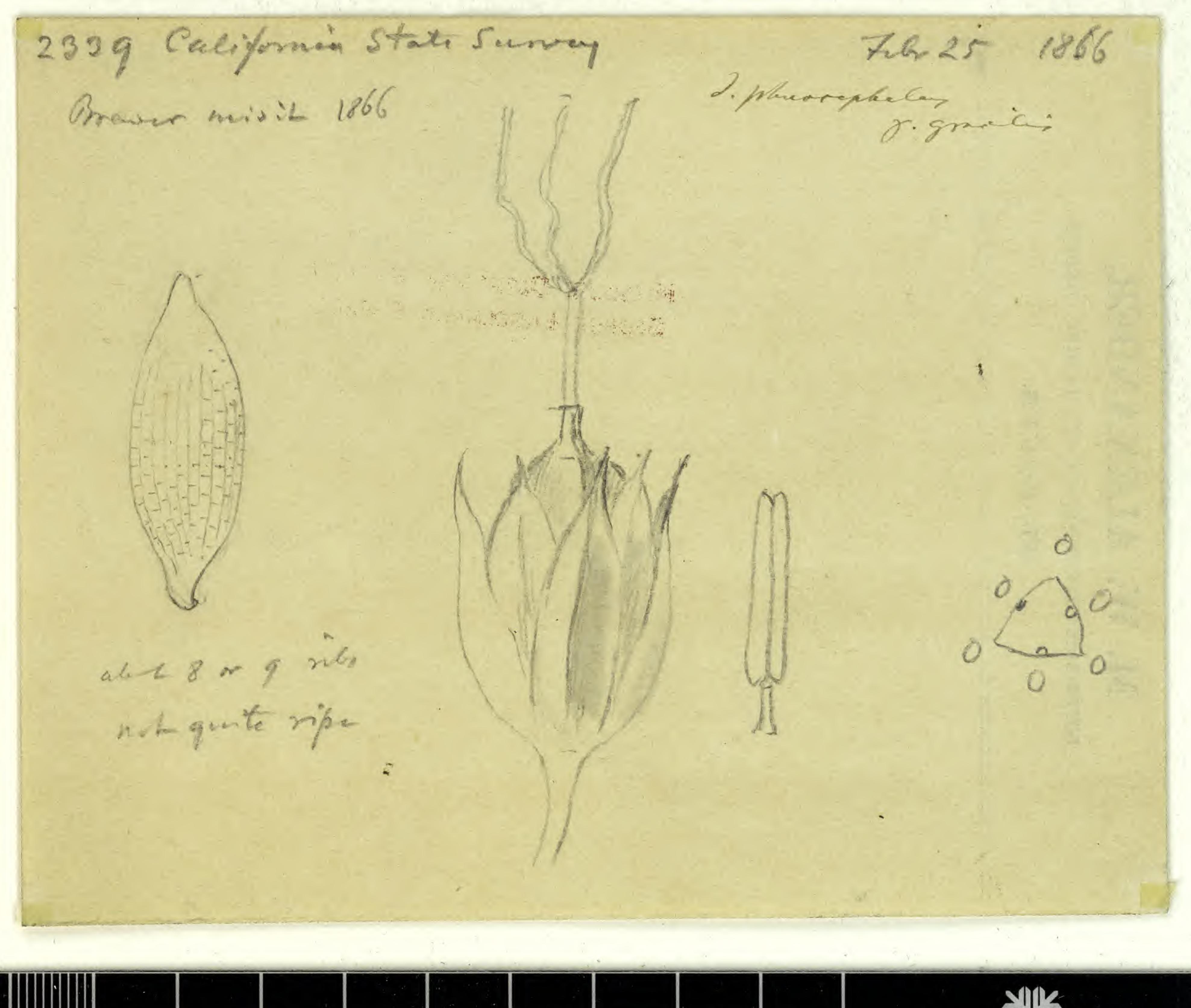
cumstances prevented me from obtaining more than a crystals, which are now deposited in the collection of Smithsonian Institute; a few others are also in the hands members of the party. We were travelling at the time forced night marches with nearly worn out animals, seek to gain a spring of water in a distant range of mounta.

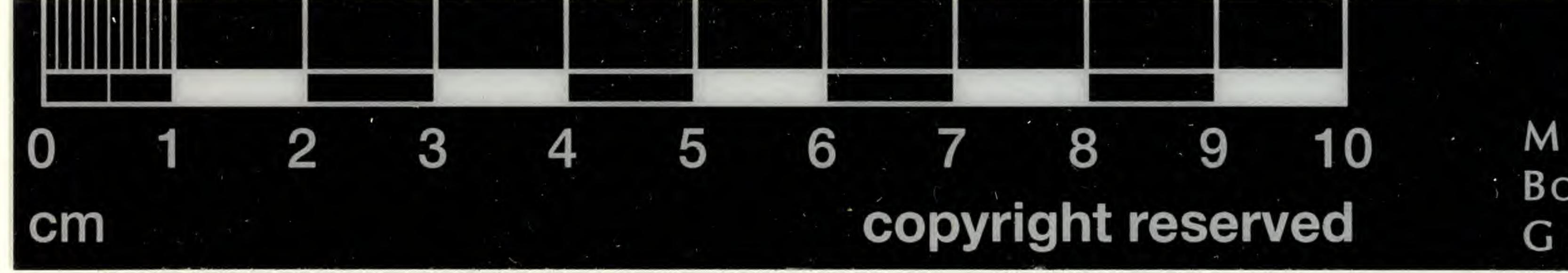
This desert was then entirely unexplored. I have but li doubt that more interesting materials are to be found at same point.

The mountains of the former Territory of Utah promis rich yield to the mineralogist. We know already of gold.

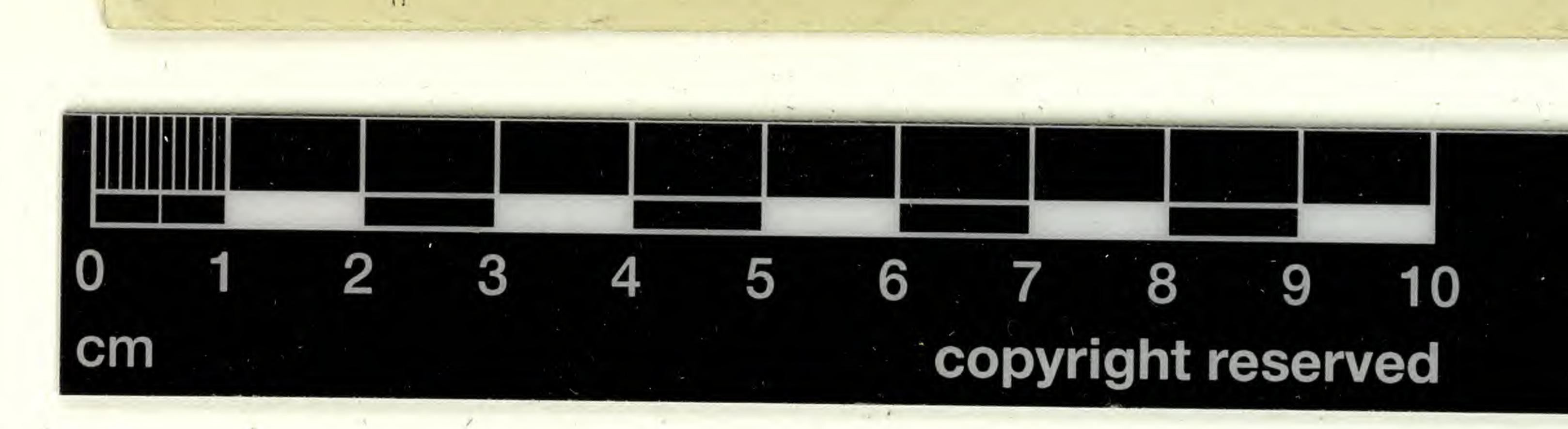
he mountains of the former Territory of Utah promise a yield to the mineralogist. We know already of gold and er ores in the east, west and south part of that district; opper and lead ores in the south, and I have discovered latter also in the centre of it; of specular iron ores and ive sulphur in the Rocky Mountains and near Little Salt e; of rock salt in the mountains south-east of Utah Lake; native alum near Salt Lake; of various other salts in the erts; and of silicates, composing the granites, porphyries, rites, trachytes, and lavas, nearly over the whole area.

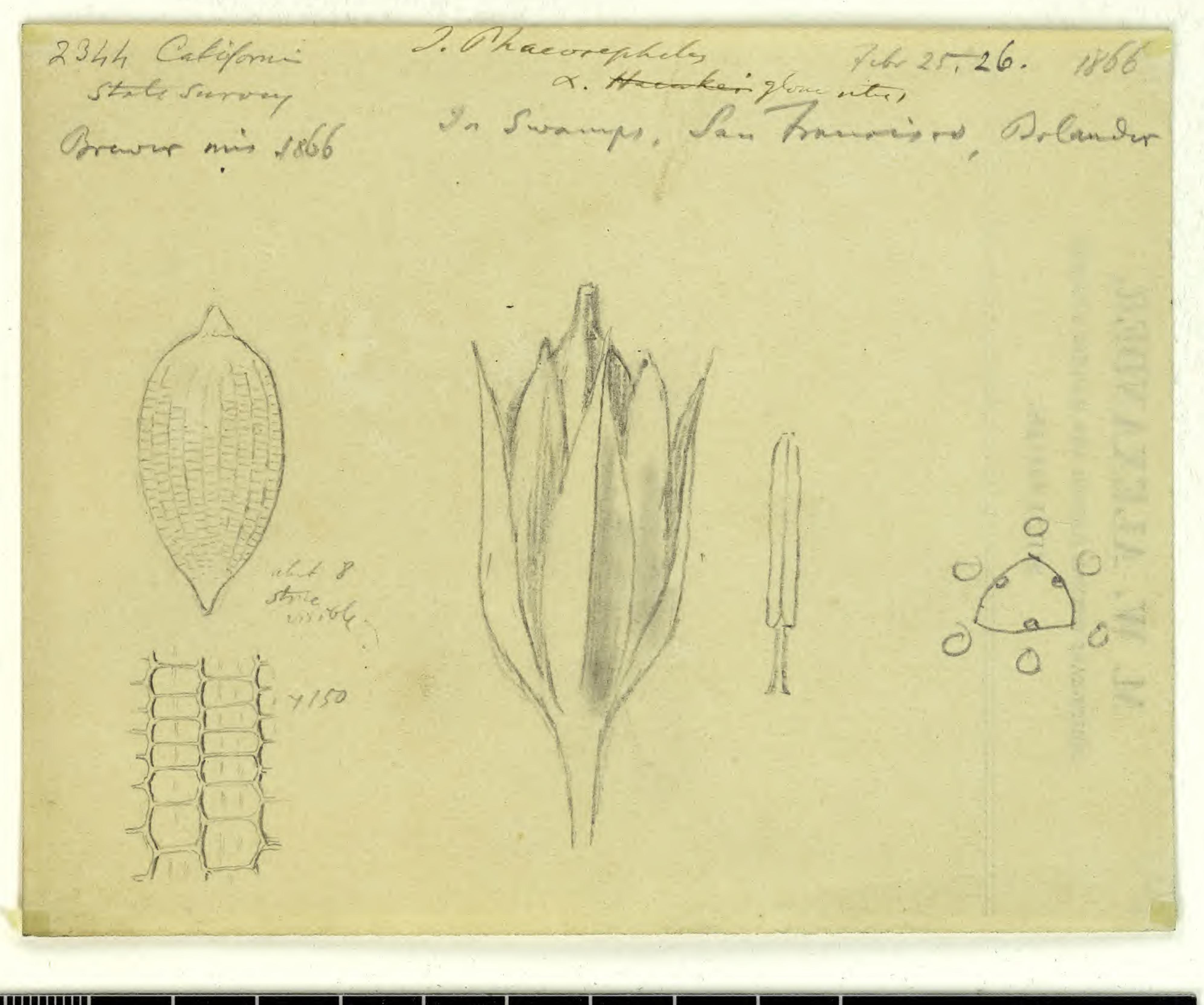
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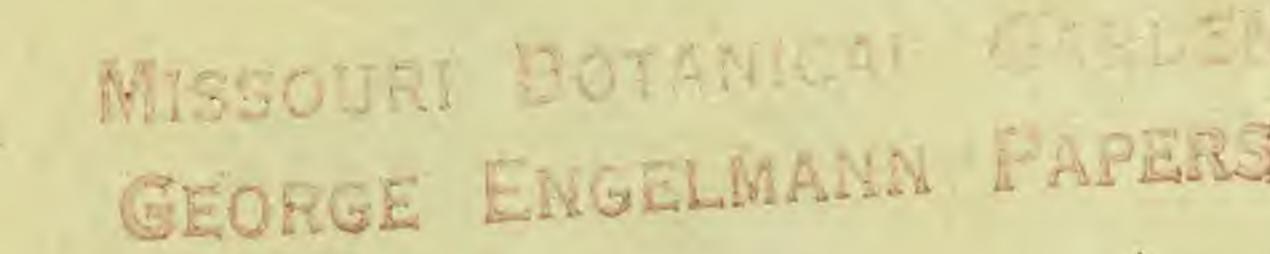


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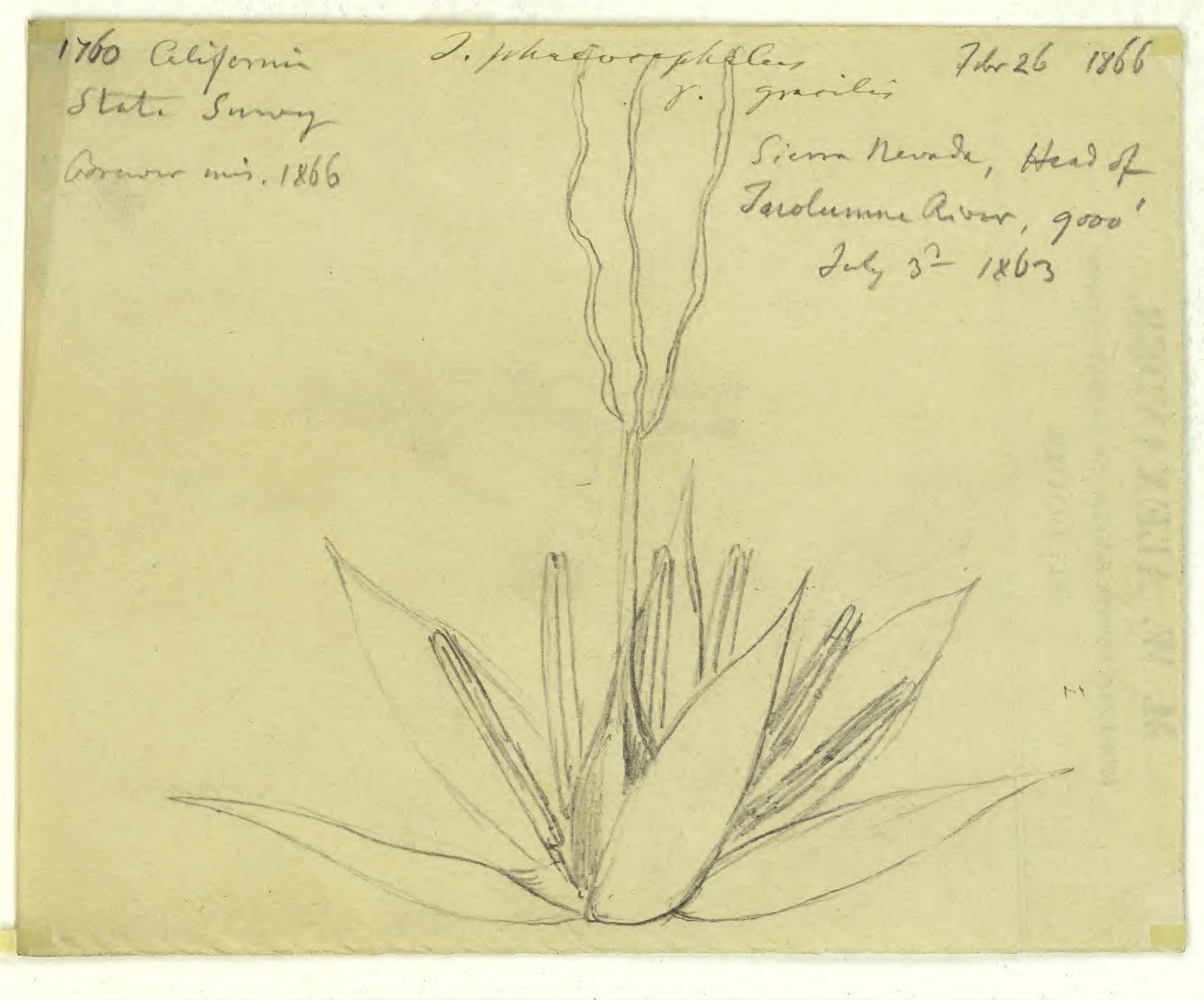




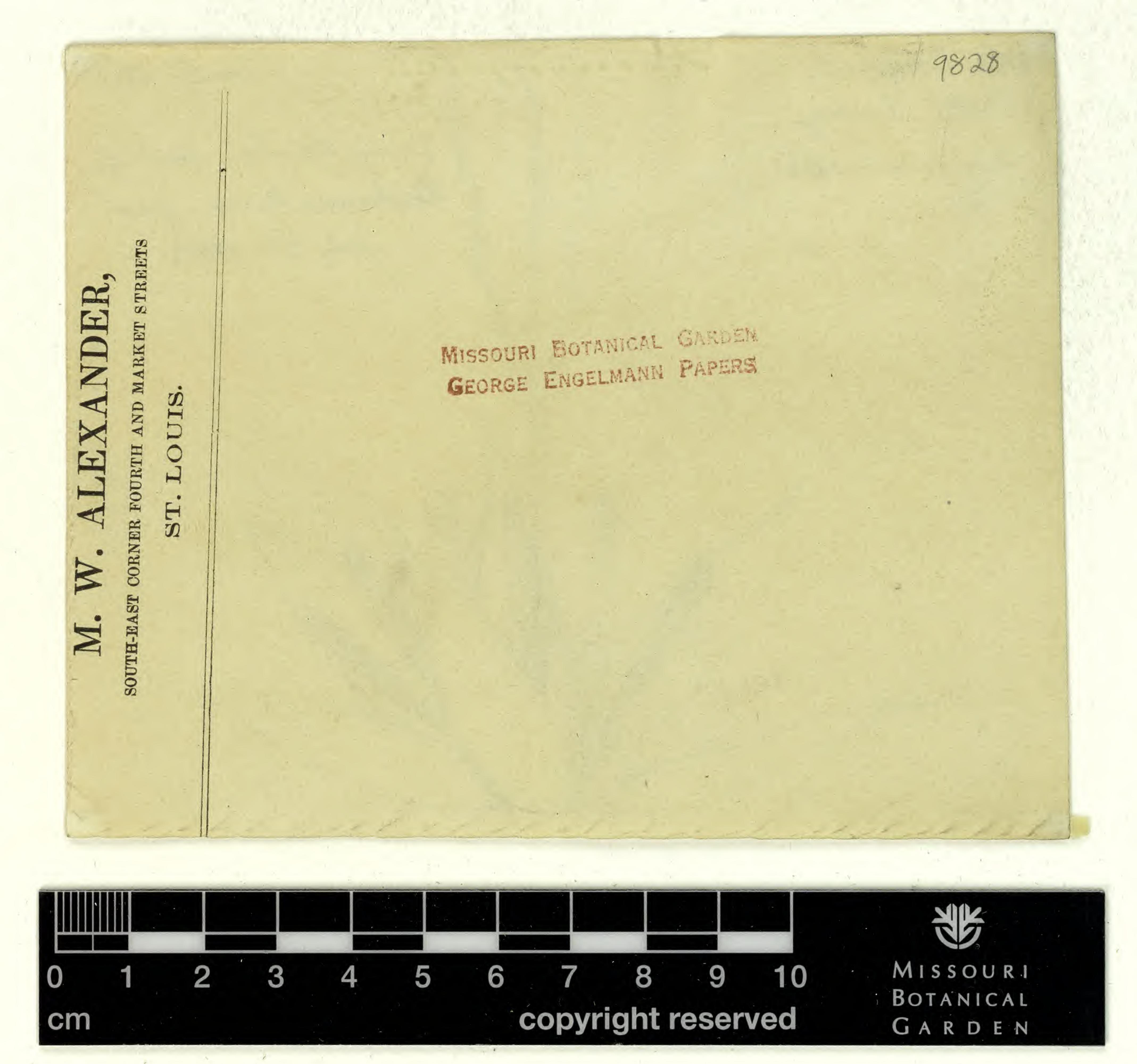


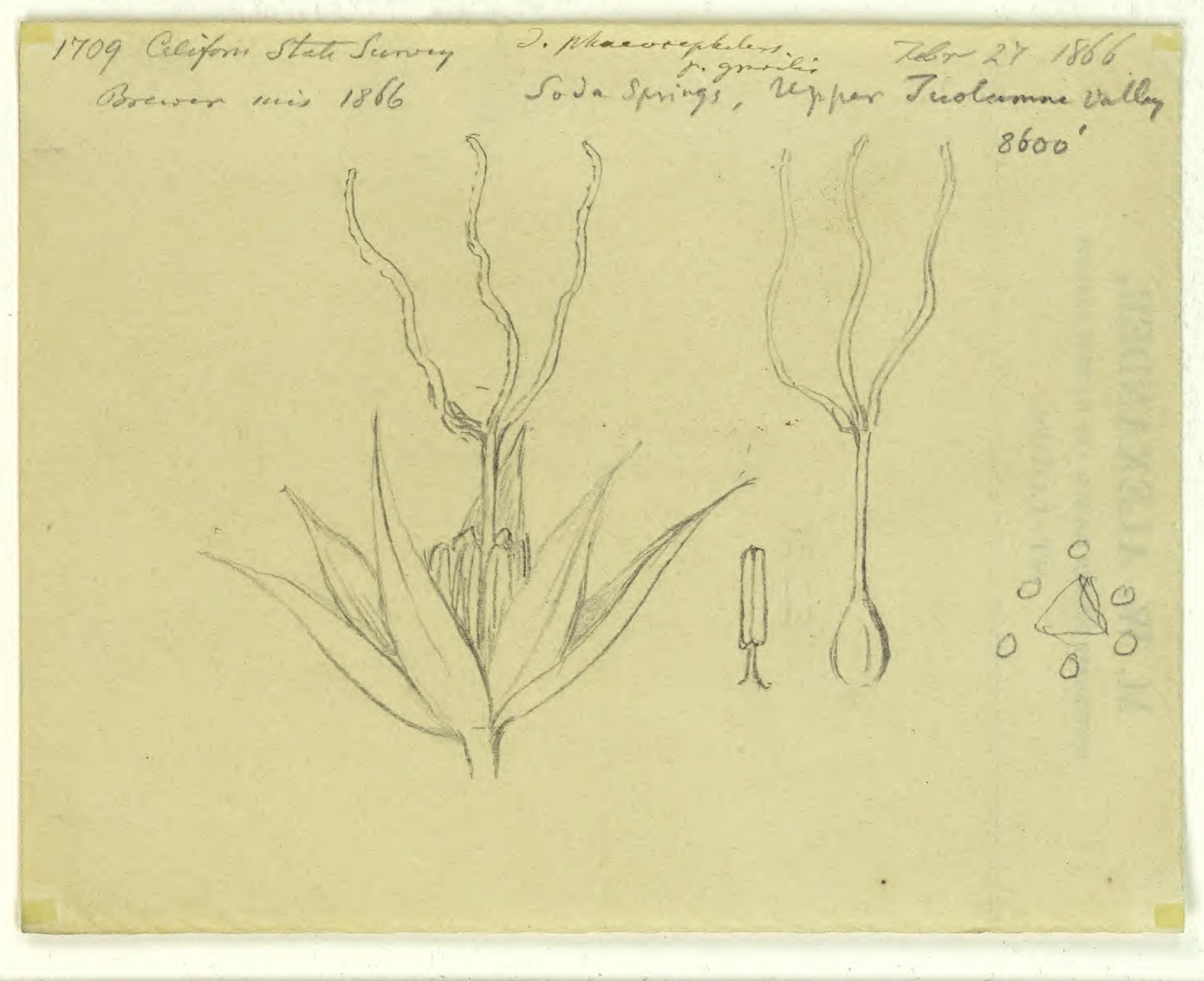






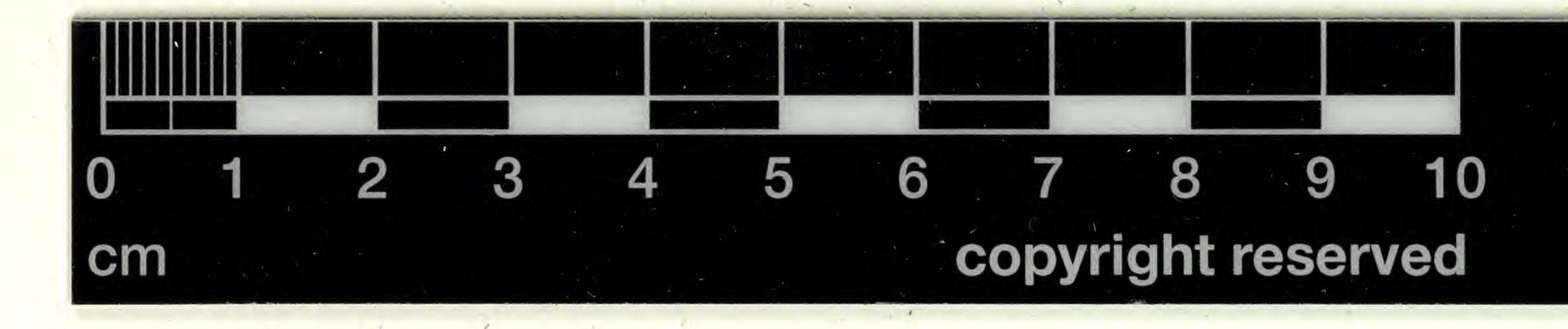




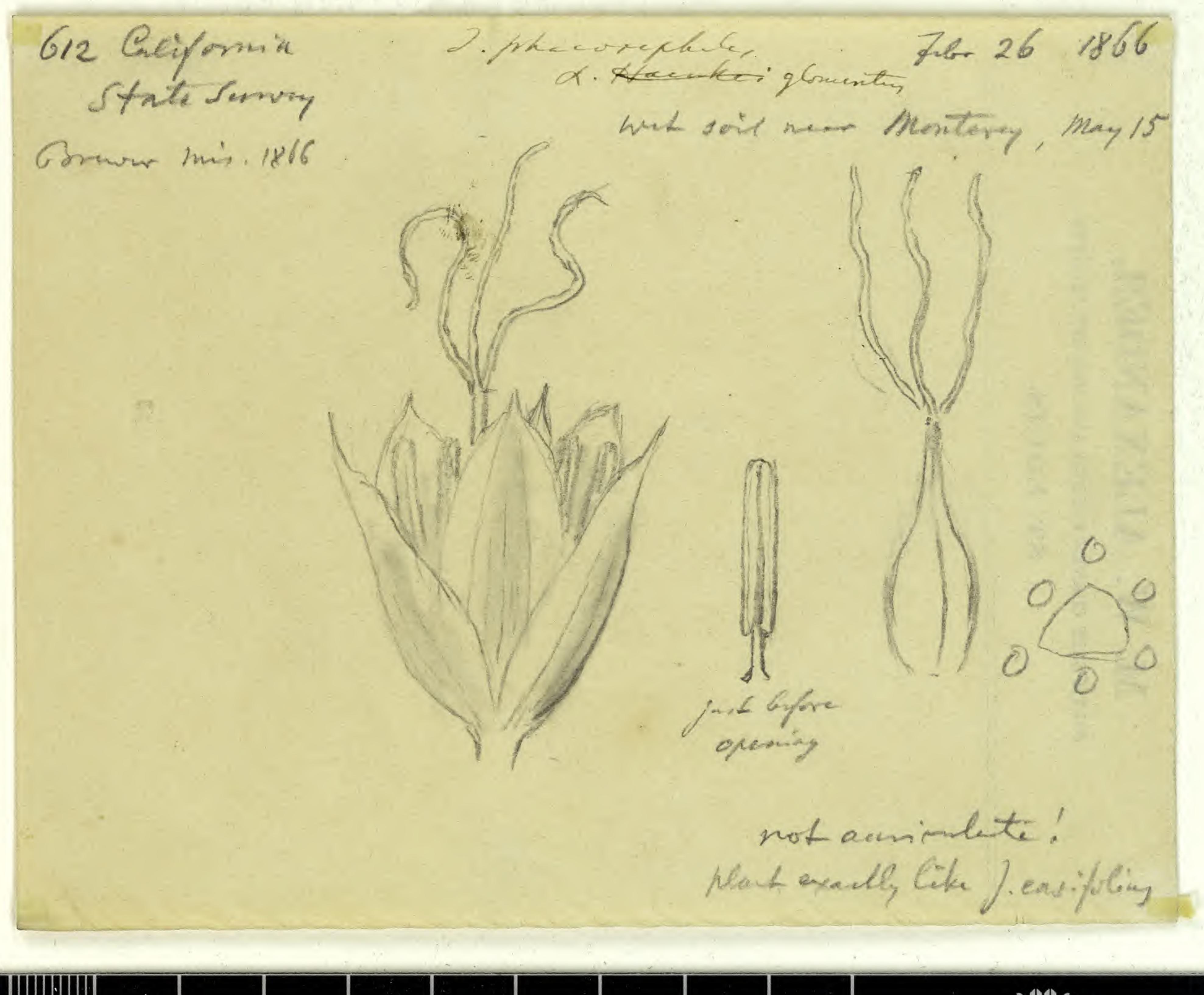




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